

REMARKS

Claims 1 - 12 remain active in this application. The specification has been reviewed and editorial revisions made where seen to be appropriate. Claims 1 and 7 have been amended to improve clarity. Support for the amendments of the claims is found throughout the application, particularly on pages 5, 7, 13 and 14, as well as being inferred by the recitation of "consecutively presented lines of data" and "consecutive image data lines" in claims 1 and 7, respectively. No new matter has been introduced into the application.

The Examiner has objected to Figures 1 and 2 as been labeled "Related Art" rather than "Prior Art". This objection is respectfully traversed.

It is well-established that the Examiner must consider everything the Applicants have stated concerning the prior art to determine the scope of any admission, if any. See *In re Nomiya*, 184 USPQ 607 (CCPA, 1975). In this regard, the Examiner's attention is respectfully called to the first paragraph of the Detailed Description of the Invention on page 7 of the present application in which it is stated that the illustrations of Figures 1 and 2 are "arranged to facilitate an appreciation and understanding of the invention and that no part of either Figure 1 or Figure 2 is admitted to be prior art in regard to the present invention." Further, it is indicated at page 10, lines 3 - 5, that "additional buffers are not necessary and are depicted only for purposes of explanation of the invention" and generally would not be included in any practical filter design. Likewise, it is noted at page 12, lines 27 - 32, that "buffers 16 and 18 in Figure 1 are not necessary and are illustrated to show separation of luminance and chrominance data, as noted above" and that "buffer 38 is not necessary but is

illustrated for correspondence with Figure 1." Therefore, Figures 1 and 2 have been explicitly not admitted to be prior art as to the present invention and, further, have been explicitly indicated to be significantly at variance with known vertical spatial filters and chrominance filters. Additionally, the M.P.E.P. does not require the label of "Prior Art" *per se* but only an similar label appropriate to the circumstances. Accordingly, it is respectfully submitted that the label of "Related Art" which has been applied to Figures 1 and 2 and explained prominently in the specification is entirely appropriate while the label "Prior Art" is clearly not appropriate under the circumstances. Therefore, reconsideration and withdrawal of this objection is respectfully requested.

The Examiner has objected to the Declaration originally filed with the application. This objection is respectfully traversed as being moot in view of the newly executed declaration attached hereto which refers to the application by serial number and is also in compliance with newly effective 37 C.F.R. §1.32. In this regard, a duly executed Authorization to Act in a Representative Capacity is also attached. Entry of both the newly executed Declaration and Authorization is respectfully requested. Accordingly, it is respectfully submitted that these documents fully answer the objection and reconsideration and withdrawal thereof is respectfully requested.

Claims 1 and 7 have been rejected under 35 U.S.C. §102 as being anticipated by Cheng et al.; claims 2 - 4, 6 and 8 - 11 have been rejected under 35 U.S.C. §103 as being unpatentable over Cheng et al. in view of Mancuso et al.; claim 5 has been rejected under 35 U.S.C. §103 as being unpatentable over Cheng et al. (taken alone); and claim 12 has been rejected under 35 U.S.C. §103 as being unpatentable over Cheng et al. in

view of Ozaki et al. All of these grounds of rejection are respectfully traversed.

The invention is directed to the performance of both vertical spatial filtering and chrominance conversion concurrently in a single filter through the use of hybrid coefficients developed, for example, as disclosed on pages 13 - 15 of the present specification. By doing so, data latency and hardware requirements for storage are substantially reduced, particularly in comparison with performing vertical spatial filtering and chrominance conversion separately and sequentially in, for example, a pipelined process.

Cheng et al., the principal reference relied upon, is directed to the difficulties and potential for error in transforming image data to or from a hue, saturation and intensity (HSI) color model where hue is specified as an angular and, hence, periodic parameter of the visual values and yielding an ambiguity in certain vector computations, particularly averaging and differencing operations. Such conversions are also indicated to be extremely non-linear in regard to noise components of the visual values. Cheng et al. is also concerned with object tracking and discrimination of edges of visual objects represented by the visual data.

Accordingly, Cheng et al. provides for separate computations for hue values of differing signs and of differing ranges in order to avoid the ambiguity and errors resulting from the angular and periodic hue values. That is, four different operations are performed for filtering of hue alone (and, it follows, using coefficients specific to hue alone) while in an HSI color model, both hue and saturation are necessary to specify a particular color/chrominance. Thus, while Cheng et al. is substantially silent in regard to any particular computations for vertical spatial filtering and/or chrominance conversion, much less concurrently in a single filter through use of hybrid coefficients,

Cheng et al. conceptually teaches away from using a single filter and hybrid coefficients to concurrently perform two operations involving both luminance and chrominance, as claimed, by using multiple filters and hue-specific coefficients/weights to perform filtering on the hue parameter alone. See, in particular, column 9, lines 49+, of Cheng et al.

The Examiner also appears to place reliance on the equations of column 12, lines 8 - 16, of Cheng et al. and some description thereof in columns 9 and 11 and in step 128 of Figure 10. However, as introduced at column 11, lines 29+, of Cheng et al., the equations are directed to a process for avoiding image blurring and the preservation of edges which are important for tracking visual objects, with which Cheng et al. is also concerned. These equations and their purpose is irrelevant to either the principles or the particulars of the present invention, as claimed. While the format of the equations of Cheng et al. may bear a superficial resemblance to the equations on page 14 of the present specification, it should be noted that a separate equation is provided for each of hue, saturation and intensity parameters and the operations appear to be performed separately as indicated in lines 1 - 2 of column 12. Further, the equations define application of a "derivative of Gaussian (DOG) operator, the $G_h(x,y)$ and $G_v(x,y)$ terms are gradient operators in the horizontal and vertical directions, respectively, and the asterisks (*) denote a convolution operation rather than multiplication, as noted at column 12, lines 16 - 18 of Cheng et al. Therefore, it is clear that these computations are very different from and substantially irrelevant to the computations to which the invention is directed and, in any event, it is abundantly clear that nothing about the equations remotely infers concurrent operations in a single filter using hybrid coefficients, as claimed, much less for vertical

spatial filtering and chrominance conversion, as claimed, as the Examiner has apparently inferred, evidently through impermissible hindsight. Therefore, it is clear that Cheng et al. does not, in fact, anticipate or support a conclusion of obviousness in regard to any claim in the application. In particular regard to claim 5, the Examiner admits that Cheng et al. does not teach or suggest removing alternate lines of chrominance information but improperly takes official notice that it would be obvious to provide for removing alternate lines of chrominance data in Cheng et al. It is respectfully submitted that such official notice is improper since Cheng et al. makes clear at several points (e.g. Abstract, line 12) that hue is computed for each pixel and, in an HSI color model, H, S and I are specified for each pixel. Therefore, the official notice which the Examiner takes is contrary to the environment and function of Cheng et al. and is thus improper. Accordingly, it is clear that the Examiner has not made a *prima facie* demonstration of the propriety of any asserted ground of rejection based on Cheng et al., alone.

Similarly, in regard to claims 2 - 4, 6 and 8 - 11 The Examiner admits that Cheng et al. does not address the accommodation of interlaced frames and relies on Mancuso et al. for demonstrating the obviousness of doing so. It is respectfully submitted that Mancuso et al. appears to be principally directed to a technique of edge detection to alter the filtering function at visual edges in an image formed by interlaced fields. While Cheng et al. is also concerned with edge detection, the respective techniques of Cheng et al. and Mancuso et al. are very different, raising a significant issue in regard to whether or not and interlaced field could be accommodated in the manner of Mancuso et al. in the environment of Cheng et al. without precluding the operation of Cheng et al. in the

manner intended (see *In re Gordon*, 221 USPQ 1125, (Fed. Circ., 1984)) and neither reference is at all relevant to the subject matter of the claims. Moreover, the Examiner does not assert that Mancuso et al. mitigates the deficiencies of Cheng et al. discussed above and unrecognized by the Examiner. Therefore, no *prima facie* demonstration of obviousness has been made in regard to any of claims 2 - 4, 6 or 8 - 11.

Similarly, the Examiner's reliance on Ozaki et al. for teaching sub-sampling of chrominance data appears to be incorrect. Ozaki et al is directed to maintaining vertical image resolution by obtaining additional *intensity* signals by a "2:1 sub-sampling of bandwidth restricted signals by a filter along the vertical temporal frequency" (see Abstract) and thus the relevance of Ozaki et al. to sub-sampling of *chrominance* data is unclear and does not appear to support the Examiner's assertions in regard thereto. In any event, it does not appear that Ozaki et al. mitigates the deficiencies of Cheng et al. to answer the claims as discussed above and the Examiner has not asserted that it does. Accordingly, The Examiner has also failed to make a *prima facie* demonstration of the obviousness of claim 12 based on Cheng et al. and ozaki et al.

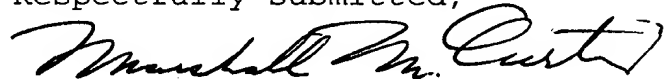
In summary, it is clear that the Examiner is clearly in error in regard to the actual content and/or suggestions of Cheng et al. and has failed to make a *prima facie* demonstration of the propriety of any stated ground of rejection in regard to any claim in the application. Accordingly, reconsideration and withdrawal of all asserted grounds of rejection are respectfully requested.

Since all rejections, objections and requirements contained in the outstanding official action have been fully answered and shown to be in error and/or inapplicable to the present claims, it is respectfully

submitted that reconsideration is now in order under the provisions of 37 C.F.R. §1.111(b) and such reconsideration is respectfully requested. Upon reconsideration, it is also respectfully submitted that this application is in condition for allowance and such action is therefore respectfully requested.

If an extension of time is required for this response to be considered as being timely filed, a conditional petition is hereby made for such extension of time. Please charge any deficiencies in fees and credit any overpayment of fees to Deposit Account No. 09-0457 of International Business Machines Corporation (Endicott).

Respectfully submitted,



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Attachments:

Newly executed Declaration
Authorization to Act in a Representative Capacity